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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/825,143

04/15/2004

Freeman Leigh Rawson III

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EXAMINER

CHERY, MARDOCHEE

ART UNIT

PAPER NUMBER

2188

MAIL DATE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/825,143	Applicant(s) RAWSON, FREEMAN LEIGH	
	Examiner MARDOCHEE CHERY	Art Unit 2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 21-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 21-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office action is a reply to applicant's communication filed on May 31, 2008 in response to the Office action mailed on May 14, 2008.
2. In response to the last Office action, claim 1 has been amended. Claims 21-27 are added. As a result, claims 1 and 21-27 are now pending.
3. The rejection of claim 1 under 35 U.S.C. 112, second paragraph is withdrawn in view of the amendment filed on May 31, 2008.
4. Claim 1 remains as provisionally rejected on the ground of nonstatutory obviousness-type double patenting over claims 1-6 of U.S. copending application No. 12/059,862.

Response to Arguments

5. Applicant's arguments filed on May 31, 2008 have been fully considered but they are not persuasive.

Applicant's representative argues on page 5, paragraph 2, that there is no disclosure in Waldspurger of using the ballooning technique to reduce system memory power consumption.

The combination of Jeddelloh and Waldspurger is relied in rejecting the claims. Jeddelloh clearly discloses reducing system memory power consumption [pars. 0029, 0035], Rawson discloses deallocating pages from a physical resource to reduce energy consumption and to power

down deallocated resource [par. 0034], and Waldspurger discloses a ballooning technique of reclaiming by a hypervisor a portion of system memory released by a guest requested by a balloon code device driver, as a result, reducing system memory power consumption [sections 1, 3.2, Figs. 1-2].

Claim Objections

6. Claim 27 is objected to because of the following informalities: the first occurrence of “wherein reducing” should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 1 and 21-26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 1 and 21-26 are rejected under 35 USC 112 first paragraph for reciting new matter. Claim 1 recites “responsive to determining that the parameter is greater than a specified first threshold”, and claims 21-26 are not supported by the original disclosure. Though the specification on page 9,

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lines 15-18 recites “If emergency conditions are indicated (e.g., a system temperature above a critical value), memory consumption activity is undertaken unconditionally (i.e., regardless of system performance levels)”, and on page 12, lines 4-7, “each guest’s quota reflects the size of each guest (the amount of memory currently occupied by the guest) as well as the amount of activity attributable to the operating system, where relatively large and idle operating systems have higher quotas than relatively small and active operating systems”, it does not provide for the newly added limitations into independent claim 1 and newly added claims 21-26.

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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10. Claims 1 and 21-27 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of U.S. copending Application No. 12/059,862. Although the conflicting claims are not identical, they are not patentably distinct from each other as shown below.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The following table is provided simply for illustrative purposes.

Instant Application: 10/825,143	Copending 12/059,862
Claim 1. A method of managing power in a data processing system, comprising: monitoring a system parameter indicative of power consumption; responsive to determining that the parameter is greater than a specified first threshold, causing a guest of the system to de-allocate a portion of system memory allocated by the guest by causing an operating system of the	Claim 1. A method of managing power in a data processing system, comprising: monitoring a system parameter indicative of power consumption; responsive to determining that the parameter differs from a specified threshold, causing a guest of the system to de-allocate a portion of system memory allocated by the guest Claim 4. ...causing a guest to deallocate a

<p>system to de-allocate said portion of system memory</p>	<p>portion of system memory comprises causing at least one operating system of the system to de-allocate a portion of system memory.</p>
<p>by invoking a balloon code device driver of said operating system to request memory, wherein said balloon code device driver requests said operating system to allocate memory to said balloon code device driver; and</p>	<p>Claim 5. ...causing the operating system to de-allocate a portion of system memory includes invoking a balloon code device driver of the operating system to request memory.</p>
<p>reclaiming by a hypervisor the portion of system memory requested by said balloon code device driver and, responsive thereto, reducing system memory power consumption.</p>	<p>Claim 6. ...the balloon code device driver requests the operating system to allocate memory to it and, thereafter, the system memory allocated to the balloon device driver is reclaimed by a hypervisor.</p> <p>Claim 1 continued. reclaiming the portion of system memory released by the guest driver and, responsive thereto,</p>

	reducing system memory power consumption.
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11. Claims 1-20 of U.S. copending application 12/059,862 contain every element of claims 1 and 21-27 of the instant application and as such anticipate claims 1 and 21-27 of the instant application.

“A later patent claim is not patentably distinct from an earlier patent claim if the later claim is obvious over, or **anticipated by**, the earlier claim. In re Longi, 759 F.2d at 896, 225 USPQ at 651 (affirming a holding of obviousness-type double patenting because the claims at issue were obvious over claims in four prior art patents); In re Berg, 140 F.3d at 1437, 46 USPQ2d at 1233 (Fed. Cir. 1998) (affirming a holding of obviousness-type double patenting where a patent application claim to a genus is anticipated by a patent claim to a species within that genus). “ ELI LILLY AND COMPANY v BARR LABORATORIES, INC., United States Court of Appeals for the Federal Circuit, ON PETITION FOR REHEARING EN BANC (DECIDED: May 30, 2001).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1 and 21-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeddelloh (2004/0260957) in view of Waldspurger (Memory Resource Management in VMware ESX Server; VMware, Inc.; Palo Alto, CA).

As per claim 1, Jeddelloh discloses a method of managing power in a data processing system [par. 0024], comprising: monitoring a system parameter indicative of power consumption [par. 0029]; responsive to determining that the parameter greater than a specified threshold [par. 0029], reducing system memory power consumption [par. 0035].

However, Jeddelloh does not explicitly disclose determining that the parameter is greater than a specified threshold; causing a guest of the system to release de-allocate a portion of system memory allocated by the guest by causing an operating system of the system to de-allocate said portion of system memory by invoking a balloon code device driver of said operating system to request memory, wherein said balloon code device driver requests said operating system to allocate memory to said balloon code device driver; and reclaiming by a hypervisor the portion of system memory released by the guest requested by said balloon code device driver and, responsive thereto.

Waldspurger discloses determining that the parameter is greater than a specified threshold [Sections 6.1 to 6.3]; causing a guest of the system to release de-allocate a portion of system memory allocated by the guest by causing an operating system of the system to de-allocate said portion of system memory by invoking a balloon code device driver of said operating system to request memory, wherein said balloon code device driver requests said operating system to allocate memory to said balloon code device driver [Abstract; Section 3.2: Ballooning, paragraph 2; Figs. 1-2]; and reclaiming by a hypervisor the portion of system memory released by the guest requested by said balloon code device driver and, responsive thereto, reducing system memory power consumption [Section 3.2: Ballooning; paragraph 3; Section 1: Introduction, paragraph 3; Figs. 1-2] to achieve predictable performances such as having a VM from which memory has been reclaimed to perform as if it had been configured with less memory (Section 3.2: Ballooning; paragraph 1).

Thus, it would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to modify the system of Jeddeloh to include causing a guest of the system to release de-allocate a portion of system memory allocated by the guest by causing an operating system of the system to de-allocate said portion of system memory by invoking a balloon code device driver of said operating system to request memory, wherein said balloon code device driver requests said operating system to allocate memory to it; and reclaiming by a hypervisor the portion of system memory released by the guest requested by said balloon code device driver and, responsive thereto because this would have helped with achieving predictable performances such

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as having a VM from which memory has been reclaimed to perform as if it had been configured with less memory (Section 3.2: Ballooning; paragraph 1) as taught by Waldspurger.

As per claim 21, Jeddeloh discloses said parameter includes system temperature [par. 0014].

As per claim 22, Jeddeloh discloses said system parameter includes system power consumption [pars. 0001, 0005].

As per claim 23, Jeddeloh discloses reducing power consumption comprises powering down said portion of system memory reclaimed by said hypervisor [pars. 0012, 0027, 0034].

As per claim 24, however, Jeddeloh does not explicitly disclose in response to determining that said parameter is less than said specified first threshold, determining if said parameter is greater than a specified second threshold.

Waldspurger discloses in response to determining that said parameter is less than said specified first threshold, determining if said parameter is greater than a specified second threshold [Sections 6.1 to 6.3] to achieve predictable performances such as having a VM from which memory has been reclaimed to perform as if it had been configured with less memory (Section 3.2: Ballooning; paragraph 1).

Thus, it would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, To modify the system of Jeddeloh to include disclose in response to determining that said parameter is less than said specified first threshold, determining if said parameter is greater than a specified second threshold because thus would have helped with achieving predictable performances such as having a VM from which memory has been reclaimed to perform as if it had been configured with less memory (Section 3.2: Ballooning; paragraph 1) as taught by Waldspurger.

As per claim 25, Jeddeloh does not explicitly discloses in response to determining that said parameter is greater than said specified second threshold, determining if said portion of system memory allocated by said guest is sufficient to handle a current load; and in response to determining that said portion of system memory allocated by said guest is sufficient to handle said current load, invoking said balloon code device driver to request said operating system to allocate memory to said balloon code device driver.

Waldspurger discloses in response to determining that said parameter is greater than said specified second threshold, determining if said portion of system memory allocated by said guest is sufficient to handle a current load [Sections 6.1 to 6.3]; and in response to determining that said portion of system memory allocated by said guest is sufficient to handle said current load, invoking said balloon code device driver to request said operating system to allocate memory to said balloon code device driver [Sections 6.1 to 6.3] to achieve predictable performances such as having a VM from which

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memory has been reclaimed to perform as if it had been configured with less memory (Section 3.2: Ballooning; paragraph 1).

As per claim 26, Jeddeloh does not explicitly disclose in response to determining that said parameter is less than said specified second threshold, determining if system performance is unacceptable; and if said system performance is unacceptable, invoking said balloon code device driver to release memory allocated to said balloon code device driver.

Waldspurger discloses in response to determining that said parameter is less than said specified second threshold, determining if system performance is unacceptable [Sections 6.1 to 6.3]; and if said system performance is unacceptable, invoking said balloon code device driver to release memory allocated to said balloon code device driver [Sections 6.1 to 6.3] to achieve predictable performances such as having a VM from which memory has been reclaimed to perform as if it had been configured with less memory (Section 3.2: Ballooning; paragraph 1).

As per claim 27, Jeddeloh discloses powering down said portion of system memory reclaimed by said hypervisor [pars. 0012, 0027, 0034].

However, Jeddeloh does not explicitly disclose wherein reducing system power consumption comprises: compacting allocated pages.

Waldspurger discloses wherein reducing system power consumption comprises: compacting allocated pages [Section 3.2] to achieve predictable performances such as

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having a VM from which memory has been reclaimed to perform as if it had been configured with less memory (Section 3.2: Ballooning; paragraph 1).

14. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rawson, III (2004/0111596) in view of Waldspurger (Memory Resource Management in VMware ESX Server; VMware, Inc.; Palo Alto, CA).

As per claim 1, Rawson discloses a method of managing power in a data processing system [par. 0018], comprising: monitoring a system parameter indicative of power consumption [par. 0018]; responsive to determining that the parameter is greater than a specified first threshold [pars. 0018, 0028], reducing system memory power consumption [par. 0018].

However, Rawson does not explicitly disclose determining that the parameter is greater than a specified first threshold; causing a guest of the system to release de-allocate a portion of system memory allocated by the guest by causing an operating system of the system to de-allocate said portion of system memory by invoking a balloon code device driver of said operating system to request memory, wherein said balloon code device driver requests said operating system to allocate memory to said balloon code device driver; and reclaiming by a hypervisor the portion of system memory released by the guest requested by said balloon code device driver and, responsive thereto.

Waldspurger discloses determining that the parameter is greater than a specified first threshold [Sections 6.1 to 6.3]; causing a guest of the system to release de-allocate a portion of system memory allocated by the guest by causing an operating system of the system to de-allocate said portion of system memory by invoking a balloon code device driver of said operating system to request memory, wherein said balloon code device driver requests said operating system to allocate memory to said balloon code device driver [Abstract; Section 3.2: Ballooning, paragraph 2; Figs. 1-2]; and reclaiming by a hypervisor the portion of system memory released by the guest requested by said balloon code device driver and, responsive thereto, reducing system memory power consumption [Section 3.2: Ballooning; paragraph 3; Section 1: Introduction, paragraph 3; Figs. 1-2] to achieve predictable performances such as having a VM from which memory has been reclaimed to perform as if it had been configured with less memory (Section 3.2: Ballooning; paragraph 1).

Thus, it would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to modify the system of Rawson to include causing a guest of the system to release de-allocate a portion of system memory allocated by the guest by causing an operating system of the system to de-allocate said portion of system memory by invoking a balloon code device driver of said operating system to request memory, wherein said balloon code device driver requests said operating system to allocate memory to balloon code device driver; and reclaiming by a hypervisor the portion of system memory released by the guest requested by said balloon code device driver and, responsive thereto because this would have helped with achieving

predictable performances such as having a VM from which memory has been reclaimed to perform as if it had been configured with less memory (Section 3.2: Ballooning; paragraph 1) as taught by Waldspurger.

Conclusion

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

16. When responding to the office action, Applicant is advised to clearly point out the patentable novelty that he or she thinks the claims present in view of the state of the art disclosed by references cited or the objections made. He or she must also show how the amendments avoid such references or objections. See 37 C.F.R. 1.111(c).

17. When responding to the Office action, Applicant is advised to clearly point out where support, with reference to page, line numbers, and figures, is found for any amendment made to the claims.

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18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mardochee Chery whose telephone number is (571) 272-4246. The examiner can normally be reached on 8:30A-5:00P.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung Sough can be reached on (571) 272-6799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

August 25, 2008

/Hyung S. Sough/
Supervisory Patent Examiner, Art Unit 2188
08/28/08

Mardochee Chery
Examiner
AU: 2188